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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,973	11/19/2003	Robert A. DiMilia	03-1842	7574
8840	7590	12/04/2006	EXAMINER	
INTELLECTUAL PROPERTY ALCOA TECHNICAL CENTER, BUILDING C 100 TECHNICAL DRIVE ALCOA CENTER, PA 15069-0001			WILKINS III, HARRY D	
			ART UNIT	PAPER NUMBER
			1742	

DATE MAILED: 12/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/716,973	<b>Applicant(s)</b> DIMILIA ET AL.	
	<b>Examiner</b> Harry D. Wilkins, III	<b>Art Unit</b> 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.138(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 19-22, 25, 26 and 30-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-22, 25, 26, 32, 34 and 36-39 is/are rejected.
- 7) ☒ Claim(s) 30, 31, 33 and 35 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/9/06</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status***

1. The rejection of claim 23 under 35 USC 112, 2<sup>nd</sup> paragraph has been withdrawn in view of the cancellation of claim 23.
2. The rejection of claims under 35 USC 102 based on Duruz has been withdrawn in view of Applicant's amendment to claim 19 requiring the anode comprise a monolithic body with at least 80 wt% iron oxides.
3. The rejection of claims under 35 USC 102 based on Martinsons has been withdrawn in view of Applicant's amendment to claim 19 requiring the anode comprise a monolithic body with at least 80 wt% iron oxides.

### ***Claim Interpretations***

4. Claims 30 and 31, reciting "wherein the body is entirely composed of", are interpreted as meaning that "the stable anode consisted of" the materials listed.

### ***Claim Rejections - 35 USC § 112***

5. Claim 25 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not support an anode where the anode was a monolithic body containing at least 80 wt% iron oxides wherein the monolithic iron oxide body was further coated with more iron oxide.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 19-22, 25-26, 32, 34 and 36-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Alder (US 3,960,678).

Alder discloses (see abstract, col. 1, lines 5-8, col. 3, lines 16-61 and Table 1) stable anodes for aluminum electrolysis cells that contain oxides, and expressly disclose  $\text{Fe}_2\text{O}_3$  and  $\text{Fe}_3\text{O}_4$ . The anode of Alder was a monolithic body.

Although Alder discloses that  $\text{SnO}_2$  was the preferred base oxide, it is clear from col. 3, lines 45-47) that Alder contemplated making the anodes with either  $\text{Fe}_2\text{O}_3$  or  $\text{Fe}_3\text{O}_4$  as the base material of the anode.

Regarding claims 20-22, 32 and 34, each of the two electrodes would have been at or near 100 wt%  $\text{Fe}_2\text{O}_3$  or  $\text{Fe}_3\text{O}_4$ .

Regarding claim 25, since Alder teach making monolithic anodes, the surface of the anode can be considered to be "coated" with the iron oxide.

Regarding claim 26, since Alder teaches the same composition of the anode as claimed, one of ordinary skill in the art would have considered it to inherently possess the claimed stability in molten cryolite at up to 960°C.

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Regarding claims 36-39, Alder teaches an aluminum electrolysis cell including a plurality of the claimed anodes, wherein the cell used a cryolite bath and was operable to produce commercial purity aluminum.

8. Claims 19-21, 25-26 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Roos et al (US 4,411,761).

Roos et al disclose (see abstract and col. 2, lines 4-36) stable anodes that contain iron oxide surfaces, and expressly disclose  $\text{Fe}_3\text{O}_4$ . The anode included up to 90 wt%  $\text{Fe}_3\text{O}_4$ . Roos et al disclose (see col. 2, lines 25-29) using the anode either as a coating on a substrate or as a stand-alone, monolithic anode.

With respect to the stable anode being “for use in an electrolytic aluminum production cell”, this limitation is related to the intended use of the claimed anode, and is not given patentable weight.

Regarding claims 20-21 and 32, Roos et al disclose (see col. 2, lines 12-16) using up to 90 wt%  $\text{Fe}_3\text{O}_4$ .

Regarding claim 25, since Roos et al teach making monolithic anodes, the surface of the anode can be considered to be “coated” with the iron oxide.

Regarding claim 26, since Roos et al teach the same composition of the anode as claimed, one of ordinary skill in the art would have considered it to inherently possess the claimed stability in molten cryolite at up to 960°C.

9. Claims 19, 20, 22, 25, 26, 32 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by TDK Electronics (GB 1,433,805).

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TDK Electronics discloses (see abstract, page 1, lines 10-18) stable anodes that contain  $\text{Fe}_2\text{O}_3$  at up to 95 mol%. TDK Electronics discloses using the oxide as a monolithic body (the method of making includes no substrate onto which the oxides are attached).

With respect to the stable anode being “for use in an electrolytic aluminum production cell”, this limitation is related to the intended use of the claimed anode, and is not given patentable weight.

Regarding claims 20, 22, 32 and 34, the anode coating included up to 95 mol%  $\text{Fe}_2\text{O}_3$ .

Regarding claim 25, since TDK Electronics teach making monolithic anodes, the surface of the anode can be considered to be “coated” with the iron oxide.

Regarding claim 26, since TDK Electronics teaches the same composition of the anode as claimed, one of ordinary skill in the art would have considered it to inherently possess the claimed stability in molten cryolite at up to 960°C.

***Allowable Subject Matter***

10. Claims 30, 31, 33 and 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

- a. Claim 30-the prior art does not teach or suggest making anodes consisting of a mixture of  $\text{Fe}_3\text{O}_4$  and  $\text{FeO}$ .

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- b. Claim 31-the prior art does not teach or suggest making anodes consisting of a mixture of  $\text{Fe}_2\text{O}_3$  and  $\text{FeO}$ .
- c. Claims 33 and 35-the prior art does not teach or suggest making anodes with an additive selected from the group consisting of oxides of Al, Si and/or Mg.

***Response to Arguments***

12. Applicant's arguments filed 25 October 2006 have been fully considered but they are not persuasive. Applicant argued that:

- i. Alder does not reasonably teach one of ordinary skill in the art to make anodes made from  $\text{Fe}_3\text{O}_4$  or  $\text{Fe}_2\text{O}_3$ . The Examiner disagrees. One of ordinary skill in the art reading the disclosure of Alder would interpret the statement at col. 3, lines 45-46, as meaning that any one of the materials could be selected as the major component of the electrode, and only that  $\text{SnO}_2$  was the *preferred* material.
- ii. Roos et al teach limiting the  $\text{Fe}_3\text{O}_4$  to 70 wt%. The broadest disclosure within Roos et al teaches an upper limit of 90 wt%  $\text{Fe}_3\text{O}_4$ .
- iii. Roos et al and TDK Electronics each relate to electrolysis of aqueous solutions. In response, as noted above, the recitation of the stable anode being "for use in an electrolytic aluminum production cell", this limitation is related to the intended use of the claimed anode, and is not given patentable weight.
- iv. TDK Electronics does not teach a monolithic anode body. This is clearly not true. In the examples of TDK Electronics, sintered bodies are

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used as the electrodes without substrates. Thus, the oxides form the entire body of the electrodes.

***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Harry D Wilkins, III  
Primary Examiner  
Art Unit 1742

hdw